With VOIP, digital department comes of age at Commerce

http://www.gcn.com/22_27/news/23494-1.html

09/15/03
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The term digital department may be a holdover from the Clinton administration, but it's still apt in describing the Commerce Department's two-year, $6.7 million makeover of its headquarters communications infrastructure, followed by a $5 million voice over IP installation.

"Everyone now has an IP telephone," Commerce CIO Tom Pyke said.

The department consolidated 13 data networks into a single Gigabit Ethernet with one outside connection. It took 50 cable installers about a year to run the optical-fiber backbone that links 64 wiring closets to two operation centers in the Herbert C. Hoover Building in downtown Washington. And 130 separate phone systems have given way to a single VOIP system serving about 4,000 users.

We decided the best way to reach all of our people in an emergency would be telephones," CIO Tom Pyke says. And so far, "people are delighted" with the functions of the VOIP phones, Deputy CIO Karen Hogan adds.

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"We've been able to take advantage of the underlying network to improve performance and save money over the long haul," Pyke said. But the immediate decision to add VOIP came from the need for emergency communications after Sept. 11, 2001.

"We decided the best way to reach all of our people in an emergency would be telephones," Pyke said.

Commerce can broadcast live or canned messages in voice or text on each phone's LCD. The next phase is to integrate the phone system with a public address system on the same network to serve public areas such as lobbies, hallways, stairwells and garages.

"To my knowledge, that kind of integration has never been done before," said Atacan Donmez, a vice president for prime contractor Computer & Hi-tech Management Inc. of Virginia Beach, Va. The need for an emergency broadcast system pushed the VOIP program on an "unbelievably aggressive schedule," Pyke said.

The size of the headquarters building also complicated the project. “It’s pretty big,” Donmez said.

The Hoover building, at about 1 million square feet, was the country’s largest government office building in the 1930s and still is the third largest, behind the Pentagon and the Ronald Reagan International Trade Center.

“We had to deal with a lot of old and historic building issues,” Donmez said. Some of the walls are 18 to 24 inches thick, he said, “and hazardous materials issues came up.”

Samples of old materials had to be analyzed before work was done, and lead paint and asbestos had to be contained by sealing off and pressurizing work areas.

Except for Cisco Systems Inc. of San Jose, Calif., which provided the VOIP hardware, all the work was done by 8(a) small and minority-owned businesses. CEN Corp. of Alexandria, Va., had installed the legacy phones and helped with the transition to VOIP.

“As we were installing the new systems, the old had to be maintained,” said Rebecca Ibach, vice president of civilian programs for Computer & Hi-tech Management.

Baltimore architectural contractor RCG Inc. supplied expertise about the building’s infrastructure.

“There were places in that building that nobody knew about,” Ibach said.

Now, Cisco 7900 series IP phone sets plug into Ethernet connections at each desk. Cisco CallManager call processing software runs on IBM eServer xSeries servers in the two operations centers. Each center has a separate power supply, and each wiring closet connects to both centers.

“The telephone system stays up if either of the centers stays in operation,” Pyke said. And an uninterruptible power system can keep the emergency communications available for two hours in a blackout.

“We’re giving special attention to IT security,” Pyke said. With a single connection to the outside world, “we can focus our attention on that single access point.”

Security includes firewalls outside and inside the network, intrusion detection systems at the network and server levels, and antivirus protection on servers and desktop systems.

Plans call for adding more IP telephony features, such as merging voice mail and e-mail queues to make either type of message retrievable by phone or computer.

For the time being, “I think people are delighted” with the current functions, deputy CIO Karen Hogan said. The old phones lacked lights to show when messages were waiting. Users needed some VOIP training, “but it still works like a phone,” Hogan said.

The elimination of a separate voice network generated immediate savings, as did the consolidation of phone lines into a few trunks.

“We require far fewer lines to the local phone company, and we pay about $10 a month for each line,” Pyke said.